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I, JULIE BILLINGSLEY, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2003903244 for a patent by MR ARVID MURRAY JOHNSON as filed on 26 June 2003.

WITNESS my hand this
Eighth day of July 2004

JULIE BILLINGSLEY
TEAM LEADER EXAMINATION
SUPPORT AND SALES



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Provisional Specification

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Invention Title

ROTATORY CRANKSHAFT

The invention is described in the following statement:

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01 **This invention relates to an apparatus which produces**
.a mechanical conversion from or between rotary and linear
.or non -rotary mechanical motion.
.(subject matter)

.Hitherto such conversions have been applied by a range of
.mechanical and electro-mechanical devices, which are not
.as suitable for some applications in mechanical and
.nautical engineering.

10 **.eg. prior art; the Common Single and Double crankshaft,**
.the Jam Watt Sunwheel crankshaft, the Cog and ratchet
.wheel crankshaft, the Scotch Yoke crankshaft, the Bell
.crank, the epicycloidal crank
.(prior art)

15

16 **.The object of this invention is to produce a**
.conversion from rotary to linear or non-rotary motion or
.vice-versa, which is superior for some purposes.

19 **.(objects)**

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20 .According to this invention a diskus rotary crankshaft
.apparatus consists of:

.(A). a frame which houses the apparatus and to which
.components are attached rigidly or non -rigidly with
.appropriate constraints of motion.

26 .(B). a shaft which can rotate about its axis when driven by
.mechanical or electromechanical means and which
.incorporates a cam or an equivalent crank pin shaft.

.The cam can in the limit be circular as with an eccentric

30 .or shaped to apply the force more surely and exactly
.to the surface if forces are large or the tolerances
.are large and make the point of contact given by a circle
.insufficiently precise.

.(C). a quoit-disk which is engaged to the main shaft at
.the cam surface and the quoit-bearing of the condiskus.

.(D). a conrod and yoke with a bearing which is engaged to
.the quoit disk at the yoke-bearing.

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41 .(E). a guide bar or slot to assist in the support of the
.yoke.

.
. (F).a slot or cylinder to guide and support the end of the
.conrod.

.
. (G).a configuration in which the mainshaft center of
.rotation is on a line perpendicular to the condiskus line of
.linear motion through the condiskus center or virtual
.center (the assymmetric configuration).

.
. (F). a configuration in which the mainshaft center of
.rotation is on a line which is the condiskus line of linear
.motion (the symmetric configuration) .

.(statement of invention/consistory)

.
- - -
. A rotatory crankshaft constructed in accordance with the
.invention will be described by way of example only, with
.reference to drawings Figures 1,2 , 3 and 4 .

60 .
.The frame is made to support the apparatus and main-
.shaft bearings and mechanical connections and

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63 .control connections. Ref. Figure 1, G1 , G2 and Figure 4.

.The mainshaft (MS1) is supported on bearings attached
.to the frame . Ref. Figure 4

.The mainshaft torque can drive the conrod via the
.condiskus or the conrod force can drive the mains shaft
.except at two neutral points. An appropriate periodic

70 .force and flywheel or mass is required.

.In the symmetric configuration the stroke and return
.stroke are symmetric. Ref. Figure 3

.In the assymmetric configuration the stroke and the return
.stroke are not symmetric. Ref. Figures 1 and 2.

.The dimensions and ratios of dimensions are not fixed
.but, must vary within limits. The cam must rotate
.within the limits of the condiskus.

.The surfaces G1 and G2 , Figure 1 , are constraints
.which produce a linear sliding motion. If the application
80 .required it , they could also move through an angle
.thus modifying , but not preventing motion.

.(specific description)

— — —

84 .

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85 .The Claims defining the invention are as follows :

.Claim 1.

. This type of Rotatory crankshaft consists of :

.(A) a main shaft and cam which is supported on bearings

.and can rotate in a circular motion carrying the cam

90 .with it.

.(B) a condiskus inwhich the main shaft and cam rotate

.within a quoit bearing.

.(C) a yoke and yoke bearing within which the condiskus

.can rotate to the extent of the motion produced by the

. mainshaft and cam.

.(D) a conrod attached to the yoke . The conrod moves

.with a stroke and return stroke ,which can be symmetric

.or assymmetric depending on the configuration of the

.centers of the main shaft, cam, and condiskus.

100 .(E) A restraint on the conrod head directing its motion,

.usually linearly. An additional constraint , or slide guide

.on the sides of the yoke if large forces are encountered.

.Claim 2.

.The two configurations possible and the range of

106 .dimensions of the cam and the range of locations of the

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**107 .centers make it possible to design a wide range of
.strokes and motions of the conrod head.**

110 .Claim 3.

114 .

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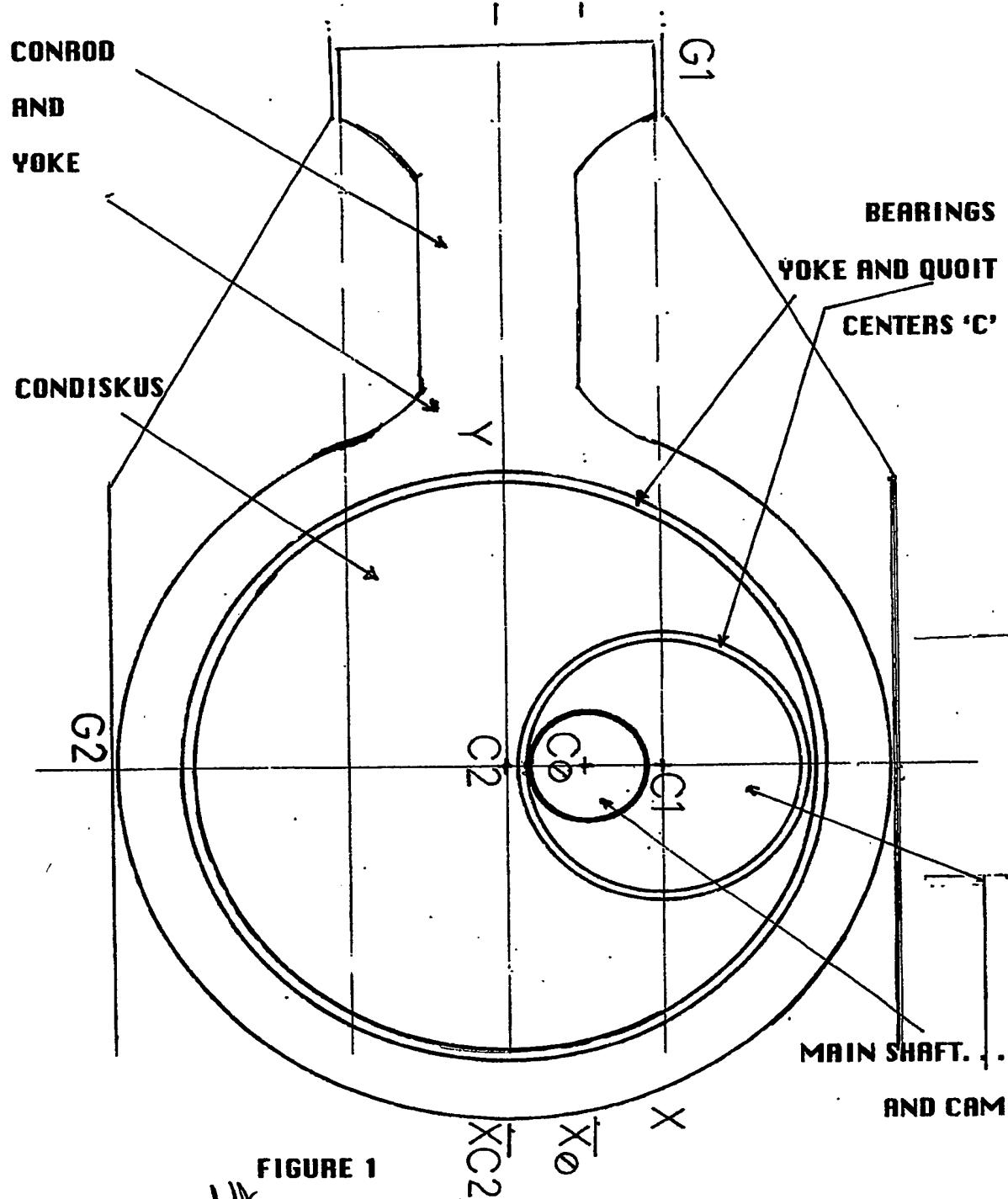
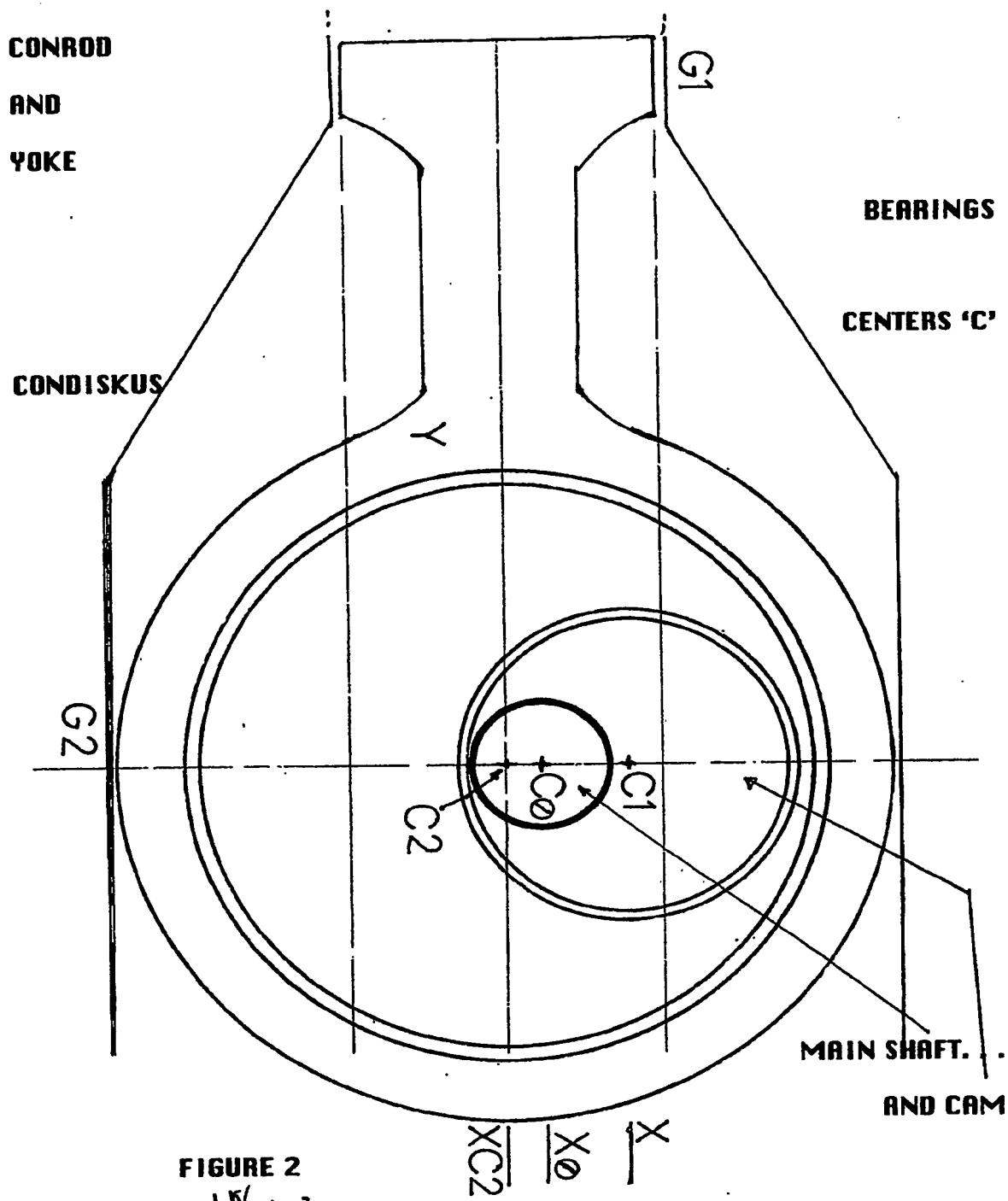


FIGURE 1



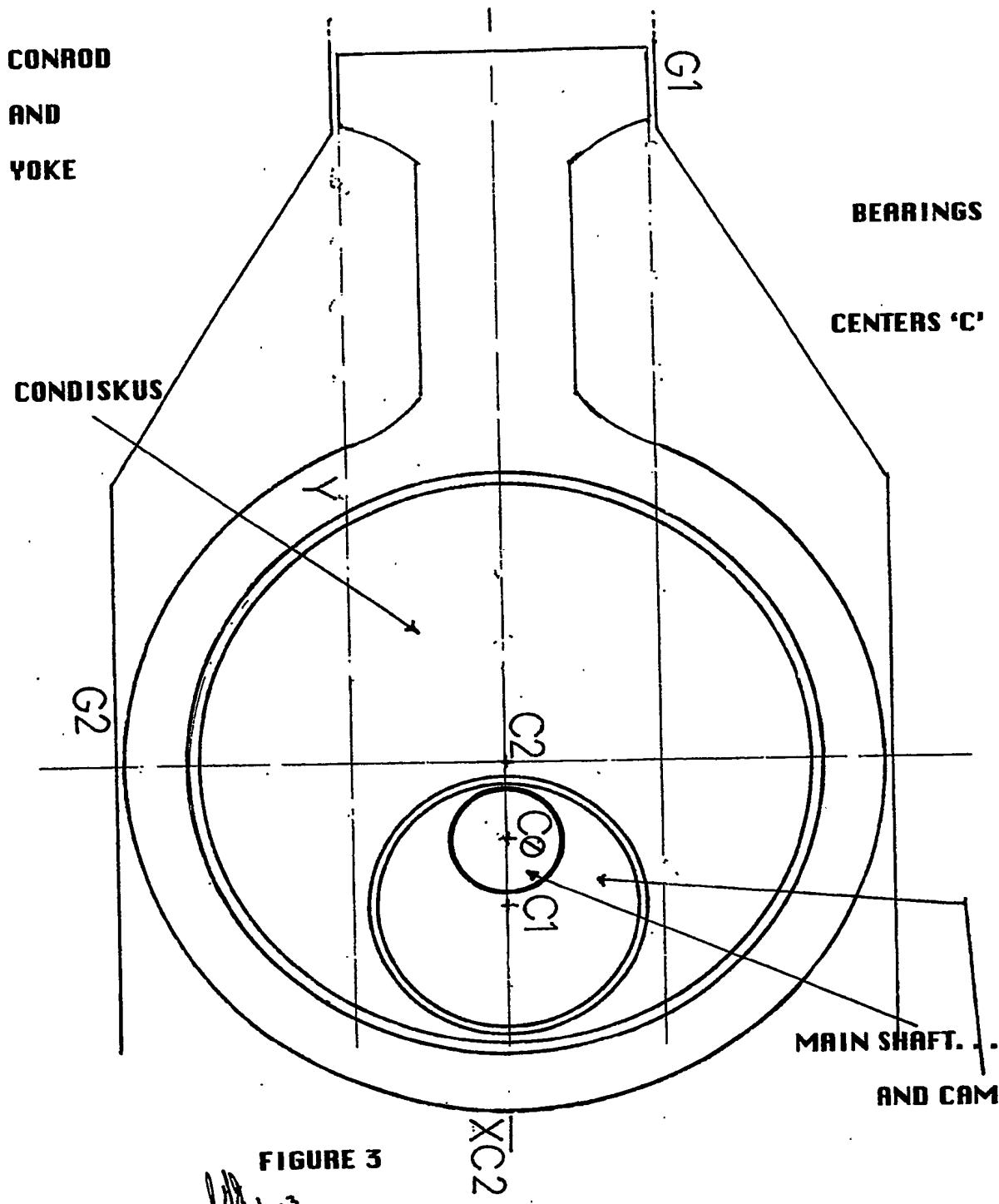


FIGURE 3

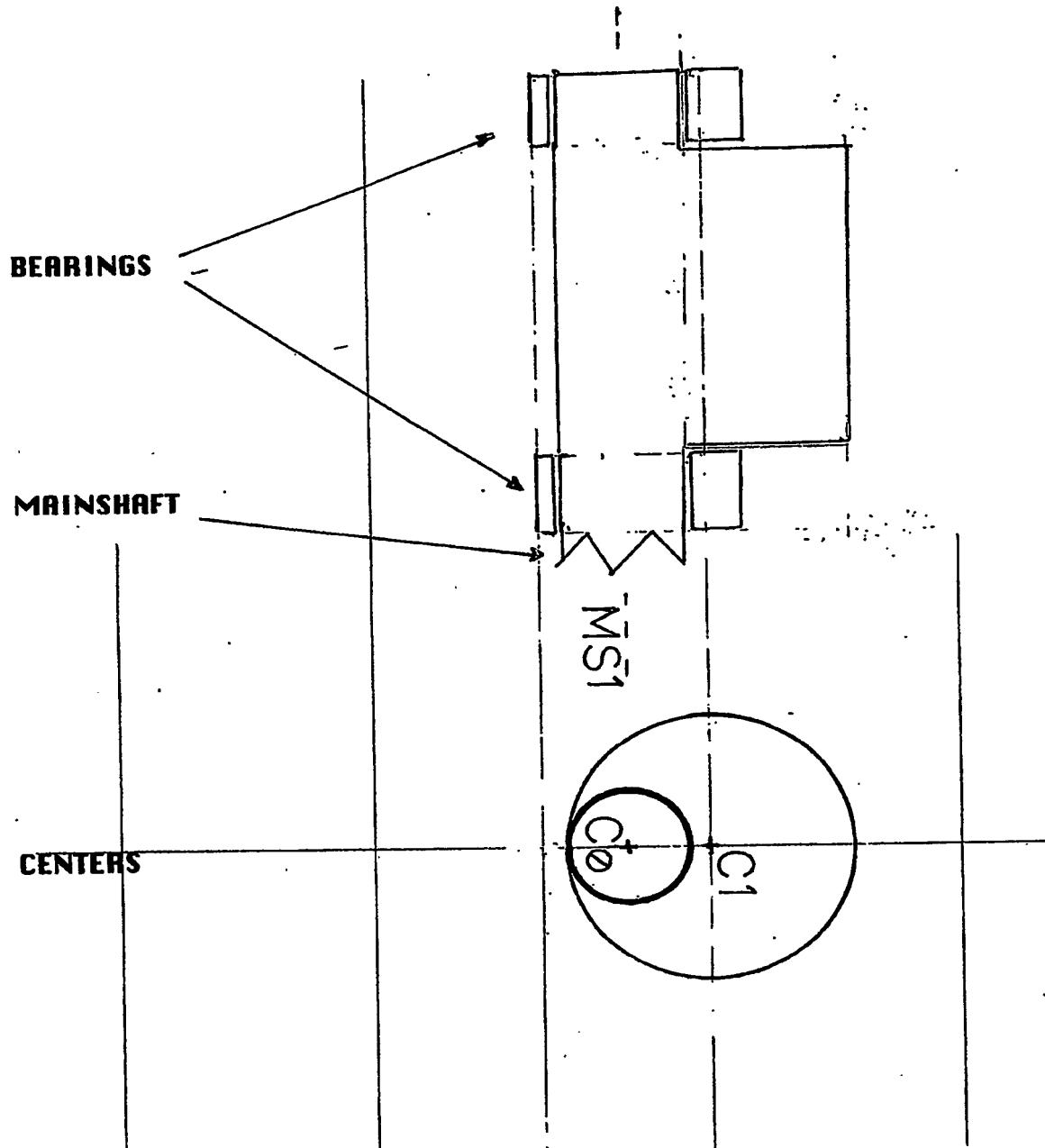


FIGURE 4

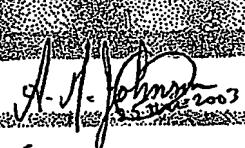
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